

GREEK MEDICINE IN ASIA
AND
OTHER ESSAYS

BY

MAJOR GENERAL S. L. BHATIA,
CIE. MC., MA., MD. (Cantab.), FRCP (Lond.),
FRS (E), FASC., *Indian Medical Service (Retired)*

With a Foreword

BY

H. E. SHRI V. V. GIRI,
President of India

INSTITUTE OF WORLD CULTURE
BANGALORE-4 (India)

E.
Dr. L. Monteiro

With best regards from the
author

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FOREWORD

This is a collection of writings by my old friend Major General S. L. Bhatia dealing with several aspects of the history and growth of medical science including medical education. Apart from describing the progress of medicine, he has, in the chapter entitled "Our Medical Heritage," rightly laid stress on the contribution to medical science made by India in the old days.

The author was a distinguished member of the Indian Medical Service and, as Professor, research worker and administrator, had considerable experience of medical administration and teaching. Even after retirement from service, he has continued his association with medical science. He is at present Emeritus Professor of History of Medicine, St. John's Medical College, and has been Honorary Professor of the same subject at Bangalore Medical College, Bangalore.

Education and Health are the two most powerful instruments for enriching the human quality of the people. A wider outlook in medicine towards bringing about a purposeful integration and unification of the medical sciences, indigenous as well as modern, is of paramount importance in providing wider and greater medical relief in our country. Major General Bhatia's writings, I am glad to say, have sought to highlight this aspect. I hope this book would be read with interest both by students of medicine and by the medical profession in general.

I wish the publication all success.

V. V. GIRI

P R E F A C E

The essays in this book have been so selected that they give some idea of the growth of Medical Science; they have been presented already as lectures in different institutions. This, I hope, would be primarily of interest to the medical students and my medical colleagues. A study of the history of Medicine is of great importance. As Professor Sigerist, the well-known Medical Historian, has said, "Medical history is above all a historical discipline, like the history of Science, history of Philosophy, history of Art or the history of Music; and the general methods of research applicable to it are those, that are common to all other historical disciplines."

A study of the history of Medicine will enable us to appreciate the unity and the universality of the Science of Medicine, and will provide us with a correct background to the progress made by it and the steps by which it has reached the present stage of development. It will make us appreciate more fully the contributions made by India to the advancement of this science. Its study will also teach us to make a more humanistic approach to the practice of Medicine.

I am grateful to His Excellency Shri V. V. Giri, President of India, for writing a Foreword for this book.

I am also grateful to the Indian Institute of World Culture and the W. Q. Judge Press, Bangalore, for their valuable help and cooperation in this publication.

S. L. BHATIA
Major General

This book is dedicated
to the Indian Institute of
World Culture, Bangalore.

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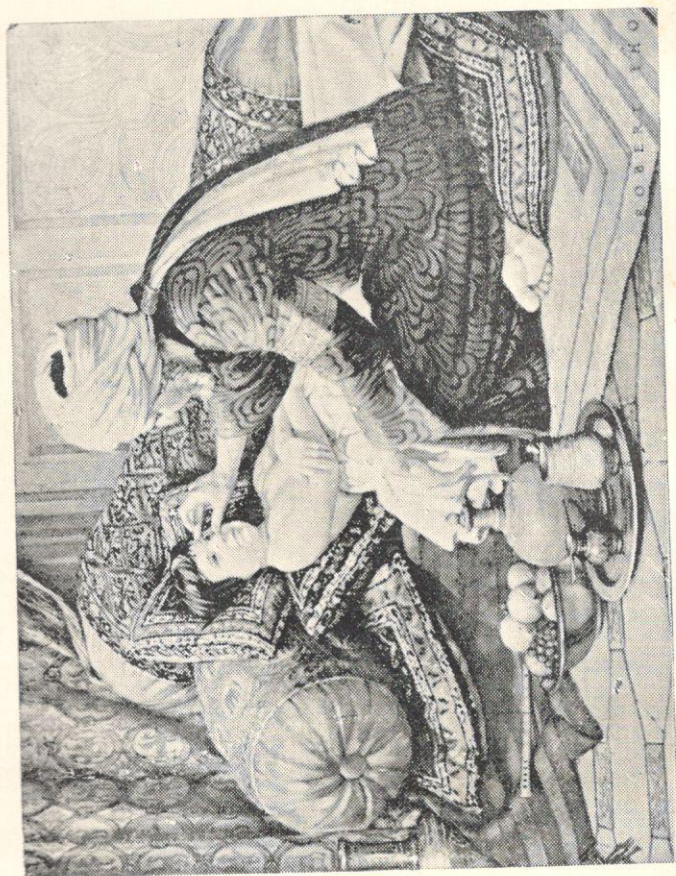


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S. L. BHATIA
Major General

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RHAZES

I GREEK MEDICINE IN ASIA*

Medicine is the oldest of Sciences. Theology and Medicine were the earliest manifestations of the growth of the human intellect. In India, we have three main systems of Medicine, namely, the Ayurvedic, the Unani and the Modern System. The Unani is the Old Greek system of Medicine, which came to India mainly with the Muslims, although there was contact between Greek and Ayurvedic medicine at a much earlier period, some centuries before the Christian era. Modern Medicine, in fact, is Greek Medicine as it developed in Europe after the Renaissance. It came to India from the seventeenth century onwards owing to our contact with the British and other Western nations.

We shall now confine our attention mainly to the Old Greek or Unani system of medicine, and study how it came to India and other parts of Asia.

The ancient Greeks took their knowledge of medicine mostly from Egypt and Babylon. They were also influenced by the Ayurvedic medicine of the Hindus in India. This happened when Alexander the Great invaded India in 327 B.C. At that time Ayurvedic medicine was in a flourishing state. It is recorded that Alexander was much impressed with the Hindu physicians' skill and even took some back with him to Greece.

Greek Medicine came to Asia again at a later period, the history of which we shall attempt to explore.

* Lecture delivered at the Indian Institute of World Culture, Bangalore, on 12th August 1958.

The rational attitude towards life, which the Greeks developed, influenced their attitude towards disease and death. The greatest of Greek physicians was Hippocrates, who is commonly known as the "Father of Medicine." He was a contemporary of Plato, and was born in 460 B.C. at Cos off the Coast of Asia Minor. He died about the year 357 B.C. He taught medicine in the Medical School at Cos and also lectured and practised at Athens and other Greek cities. His teachings are contained in the *Corpus Hippocraticum* (Hippocratic Collection). It is full of knowledge and wisdom and is as fresh today as it was when it was written. It includes the treatises "Aphorisms," "Prognostics," "Epidemics," "Diet," "Acute Diseases," "Wounds of the Head," "Airs, Waters and Places" and the Physicians' Oath.

It was a brilliant period in the history of Greece. The great achievement of Hippocrates consists in having dissociated medicine from theology and magic. He laid stress on the clinical examination of the patient more than on anything else. He introduced ethical principles into the practice of medicine, which are much the same as those laid down by Charaka and Sushruta, who preceded Hippocrates by centuries. The famous Oath of Hippocrates is known all the world over and still forms the basis of the ethics of the medical profession today. He raised medicine to the status of a science and placed it on a high pedestal by combining it with the humanities.

Hippocrates also propounded a humoural theory of disease. He suggested that the human body had four qualities — dry, moist, hot and cold — and four humours, viz., blood, phlegm, black bile and yellow bile. Derangement of one or more of these humours caused sickness.

This hypothesis is very similar to the theory of *Tridosha* (*Vata*, *Pittha* and *Kapha*) of Ayurvedic medicine.

Then came another great man, Aristotle (384–322 B.C.), who was a pupil of Plato. He was not a practising physician himself, but included medical science in his comprehensive studies. Like Hippocrates he insisted on the scientific method in studying health and disease.

After Aristotle the glory of Greece began to fade, and the Hippocratic tradition moved to Alexandria in Egypt. Here a medical school was established about the year 300 B.C., where the teachings were those of Hippocrates. The sciences of anatomy and physiology were here studied and taught. This was made possible by the introduction of the dissection of the human body. Owing to the custom of mummification of the dead bodies in Egypt, the Egyptians had gained a fair knowledge of the human body.

By the first century of the Christian Era the centre of civilization had shifted from Greece to Rome. But medicine in Rome was Greek medicine and all the great physicians in Rome were Greeks.

For long after the death of Hippocrates there were no genuine doctors in Rome. Greek doctors made their first appearance in Rome about the beginning of the second century B.C. In 90 B.C. Asclepiades, a Greek physician, appeared in Rome. He was born at Bythnia, educated at Athens and attended the Medical School of Alexandria. He quickly gained in reputation and was known as the Prince of Physicians. In treatment he showed a marked preference for suitable diet, massage and rest over the administration of drugs. He was a keen and patient ob-



server and was responsible for classifying diseases into acute and chronic.

The greatest figure in Graeco-Roman medicine after Hippocrates was Claudius Galen, who was born in 131 A.D. in the town of Pergamus in Asia Minor. He studied medicine at Alexandria, which had the best Medical School at the time. He also visited Greece. In 162 A.D. he came to Rome. Marcus Aurelius was then the Emperor, and Roman civilization was at the height of its glory. Medicine in Rome had not advanced to the same extent as in Greece. There were many sects and schools of thought. Galen soon became the most renowned physician in Rome. He wrote a great deal. During his life-time, he is said to have written some five hundred treatises on medical subjects, of which a hundred have survived. He practised dissection, but, as dissection of the human body was forbidden in Rome, he dissected monkeys and other animals. He was truly a scientist and believed in the experimental method.

Galen died in 200 A.D. His influence remained dominant in medicine during about 1,200 years. He codified all Graeco-Roman medicine from the time of Hippocrates and made many contributions of his own. His writings were the standard textbooks in medicine for centuries. His authority remained supreme, and this unfortunately served as a check to further progress.

After the Greek civilization went down, its culture first continued in Alexandria and then at Rome. When the Roman Empire broke up, its culture disappeared from Europe for a thousand years. After the death of Emperor Marcus Aurelius, the Roman Empire began to crumble, and Rome itself became untenable. The seat of Government was transferred to Constantinople, and with it went

the science of medicine. The medical schools disappeared. The Greek manuscripts were lost or destroyed. Medicine was no longer a science. For centuries, it seemed as if Hippocrates and Galen had laboured in vain.

While in Europe medicine as a science seemed to be at a standstill for centuries after the fall of Greece and Rome, the light of knowledge had not been altogether extinguished. Many of the works of Hippocrates and Galen and other Greek physicians had been safely evacuated to Constantinople, where they were carefully preserved. From Constantinople this knowledge spread to Arabia, Mesopotamia and Persia.

A study of the historical development of medicine in Persia and Arabia shows that medicine there was partly Greek and partly Indian. The Nestorians were chiefly responsible for the establishment of Greek medicine in Persia, where they opened several schools and hospitals, including the well-known medical school at Jundisapur. After Islamic conquests, Persian medicine passed under Arabian influence.

At the time of the Moslem conquest of Syria and Iraq, Greek culture and science were in the hands of Syrians, who had adopted Christianity early and had become very ardent missionaries of that Faith. Their missionary zeal took them to India, Ceylon and Central Asia and China, where they took also something of Greek culture and science with them. We still have many Syrian Christians in South India.

The Nestorians or East Syrians were the followers of Nestorius, a Syrian monk, who became Patriarch of Constantinople in 428 A.D. They were students of the Greeks, from whom they took their philosophy, medicine and

sciences, and became the custodians of Greek culture. They translated most of the Greek classics into Syriac. They established many schools, but the one at Jundisapur became a very famous school of medicine. When they went to Persia to escape persecution, they took Greek culture and science with them. Later, after the Arab conquests, it was mainly the Nestorians who introduced Greek science, including medicine, among the Arabs. During the fifth and sixth centuries most of the Greek works of Aristotle, Hippocrates, Plato, Pythagoras, Homer and of many Graeco-Roman authors had been translated into Syriac. Thus, when Islam was established in Syria and Iraq, a ripe civilization was ready to transmit Greek and Persian science and culture to the Arabic-speaking world. The Jews and Zoroastrians also helped in transferring Greek culture, including Greek science and medicine, to Asia.

The first century of the Abbasid period (750–850 A.D.) is unique in the annals of history. It was a century of translation and preparation, and by the end of that time the Arabic-speaking world had almost all the knowledge of the time, Greek, Indian, Persian and Greco-Roman, at its disposal.

During this period the names of three Khalifas stand out prominently. Al-Mansur was practically the founder of Baghdad and one of the greatest names in Islam. He encouraged men of science and learning and was the first to have Greek and Indian classics translated into Arabic. Harun-Al-Raschid's reign is usually regarded as the Golden Age of Islam. Baghdad became the cultural as well as the political and economic centre of the world. He gave encouragement to science and culture. Al'A Min was

a very learned Khalifa. The knowledge of medicine as well as astronomy, literature, music and arts became available in Arabic on a wide scale in the Empire during this period. Important manuscripts were collected, edited and translated.

It is to be observed that the progress of science and the arts, including medicine, followed very closely the fortunes of the Islamic Empire. The reserved attitude of the early orthodox Khalifas gave way to the most generous and liberal attitude of the Abbasid Khalifas, which was a great stimulus to the progress of medicine.

According to Professor Browne, the Cambridge historian of Arabian medicine, Arabian medicine is that body of scientific or medical doctrine which is enshrined in books written in the Arabic language, but which is for the most part Greek in its origin, though with Indian, Persian and Syrian accretions, and only in a very small degree the product of the Arabian mind. Its importance lies not in its originality, but in the fact that in the long interval which separated the decay of the Greek learning from the Renaissance, it represented the most faithful tradition of ancient wisdom, and was during the Dark Ages the principal source from which Europe derived such philosophical and scientific ideas as she possessed.

The translation of the Greek books into Arabic, either directly or through intermediate Syriac versions, was effected for the most part under the enlightened patronage of the early Abbasid Khalifas at Baghdad from the middle of the eighth to that of the ninth century by skilful and painstaking scholars, some of whom were Arabs of Mohammedan faith, but others Syrians, Hebrews or Persians of the Christian and Jewish faith. Some four or five

centuries later, European seekers after knowledge, cut off from the original Greek sources, betook themselves with ever-increasing enthusiasm to this Arabian presentation of the ancient learning and rehabilitated it in a Latin dress; and for the first hundred years after the discovery of the art of printing, the Latin renderings of Arabic philosophical, scientific and medical works constituted a considerable proportion of the output of the printing presses in Europe.

The Arabs inspired by the teachings of the Holy Prophet, Mohammed, became the torch-bearers of learning and culture. They realized the tremendous value of the Greek and Roman literature in medicine which they had acquired. They followed these systems and wrote commentaries on them. Unfortunately, dissection was not permitted and surgery suffered on that account. Their most important scientific advance was in the realm of chemistry, with which the old *materia medica* was considerably enriched.

Two Arab Physicians were outstanding, namely Rhazes and Avicenna. They played an important part not only in introducing Greek medicine in Arabia, but also in the revival of learning in Europe. Rhazes was born in 680 A.D. in the Persian town of Rai. He compiled a twenty-five-volume medical encyclopædia, based largely on Galen, and over two hundred other works. He was a very original thinker. It was he who introduced animal gut in sutures for abdominal wounds.

The second great physician was Avicenna (Abu Ali Ibn Sina). He wrote the well-known *Canon of Medicine*, which was used as a textbook in European medical schools long after the Renaissance. He made many valuable con-

tributions to medical science. He was theologian, philosopher, poet and scientist.

In the East, the Muslim influence spread to Afghanistan, Central Asia and India, and with it came the Greco-Roman medicine as taught and developed in the medical school at Baghdad. The Mohammedans first came to India in 711 A.D., and their visits continued for centuries, till ultimately the Moghul Empire came into being with Babar in the sixteenth century. The Greco-Arabian medicine which came to India with the Muslims is commonly known here as Unani medicine.

In India, the Greco-Arabian or the Unani system of medicine spread with the advent of Muslim influence, and during the reign of Moghul Emperors it reached the height of its glory. Emperor Akbar collected at his court many distinguished *hakims* (physicians) such as Hakim Abul Fateh Gilani, Hakim Rutfullah Gilani and Hakim Ainul-Mulk Siraji. According to the advice of Hakim Abdul Fateh Gilani, many hospitals were established in the kingdom. An account of these is given in *Akbar Nama* (Vol. 3, p. 3). Munshi Lalchand has referred to these hospitals in his history of Agra.

After Akbar, when Emperor Jehangir ascended the throne, he issued the following proclamation at the time of his coronation in 1014 H.E.:—

In all big cities, hospitals should be established for the treatment of the sick and the expenses for running these hospitals will be paid by the Government.

Emperor Shah Jehan followed the example set by his predecessors and made special efforts to establish hospitals. He established one hospital behind the Jamai Masjid

at Delhi in 1060 H.E., to which he appointed some well-known *hakims*.

Emperor Aurangzeb also established several hospitals in his kingdom.

Among the very able Unani physicians during the Moghul period, Hakim Ali Gilani occupies a high rank. He wrote a very fine commentary on Avicenna's *Canon of Medicine*. Among others, I may mention the names of Hakim Hasan Gilani, Hakim Sanaullah Khan of Farrukhabad and Hakim Mohammad Akbar Arzani, who wrote an important book on medicine.

During the Moghul period many books were written on Unani medicine. The well-known book *Madanushifa Sikarshahi* contains commentaries on Unani medicine and incorporates many useful things from Ayurvedic medicine. Special attention was paid to the medicinal herbs in India and books written on them. Medical schools for giving instruction in Unani medicine were established at Lahore, Delhi, Agra, Lucknow and Hyderabad (Deccan).

At Lucknow Mirza Ali Khan Sahib ranked high. He was the physician of King Shah Gaziuddin-Hyder of Oudh. It is recorded that he was known by the title "Hakim-ul-mulk." Hakim Abdul Aziz established in Lucknow the well-known institution known as Takmil-u-Tibb.

There were some well-known *hakims* in Lahore, Bhopal and Rampur. In Delhi, the name of Hakim Ajmal Khan is well known, and in Hyderabad (Deccan) Mir Fazal Ali Khan. There were also Hakim Ahmed Syed Amrohi, who was Director of Medical Services in the Deccan, and Hakim Mohammad Abdul Aziz Khan Sahib, who was

physician to H. H. Mir Mahboob Ali Khan Asafjah, and Hakim Syed Altaf Hussain Sahib, who was also appointed as the Director of Medical Services.

It is to be observed that, as the Mohammedans in Baghdad had absorbed Greek as well as Ayurvedic medicine, in India too, they adopted Hindu sciences and art, including Hindu medicine to a great extent. They translated many Sanskrit and Hindi books into Persian. They paid the same attention to Ayurvedic medicine as they did to Greek medicine at an earlier period. So the Unani medicine which is practised today is a blend of both Greco-Arabian and Ayurvedic medicine.

Unani Medicine, like Ayurveda, is also based on the Humoural Theory. According to it, the world consists of two types of matter, gross and subtle. The gross matter comprises Earth, Water and Air, while the subtle matter consists of Energy and Soul. For the medical man energy is of importance and it is symbolized by fire. All the elements interact with each other. In the human body four humours are produced, namely, *Khoon*, *Safra*, *Souda*, and *Balgham*. These are responsible for the replacement of tissue wear and tear and for supplying energy to the body. When the humours become abnormal, they cause ill health. There is a view that under certain circumstances *ufoonath* may be caused due to these humours, which may result in diseased conditions. *Ufoonath* means the occurrence of changes leading to lowered resistance.

Glancing at the progress of human thought through the ages, one cannot help admiring the great contributions of ancient Greece. This is how Lucretius, one of the great interpreters of Greek thought, pays homage to Greece:—



The world was thine to read and having read
 Before thy children's eyes thou didst outspread
 The fruitful page of knowledge, all the wealth
 Of wisdom, all her plenty for their bread.

(Bk. III. Translated by D. A. STATES)

Of all the Greek contributions to the practice of medicine, the most outstanding and permanent is the Hippocratic Oath, which is a blend of both old Greek and Indian wisdom. Gomperz calls it a "monument of the highest rank in the history of Civilization."

This, then, is briefly the story of Greek medicine as it came to Asia, including Arabia, Persia, India and other countries. Such a study enables us to appreciate the unity and universality of the science of medicine, and impresses upon us the vital necessity of making a humanistic approach to its practice.

II WAR AND THE SCIENCE OF MEDICINE*

I consider it a great honour to have been invited to deliver this Oration. I sincerely thank you for it. In the past, four distinguished colleagues of ours were the Netaji Memorial Orators. It is indeed a great privilege for me to join them, and to make my humble contribution. The subject, which I have selected, namely "War and the Science of Medicine" is of topical interest especially at this moment, not only on account of the prevalence of Emergency in our country, but also because of the general state of unrest in the international sphere. I have a feeling, that Netaji would have liked this subject.

Some of us during our lifetime have witnessed two World Wars of unprecedented magnitude and even today there is no peace amongst the nations. The atmosphere is surcharged with international mistrust and ill-will. Science, despite the great progress it has made, has provided no satisfactory remedy for this. On the contrary, the misuse of Science for military and political ends has created world-wide fear and a sense of insecurity. This is due to the cleavage which has occurred between Science and the Humanities. It is our duty to repair this cleavage, and prevent the impending disaster.

It is essential, that good-will and loving kindness should prevail amongst the nations as between individuals. For

* Netaji Memorial Oration, delivered at the Conference of the Association of Physicians of India at Patiala on 24th January 1964.

this purpose a complete change of heart is necessary. In all our actions we are and should be guided by our conscience, in which are enshrined all the highest ethical principles. It is our duty as physicians to see to what extent the Science of Medicine can be helpful at this juncture.

The Medical Profession has always been playing a vital part when any country is at war. This has been the case ever since times immemorial. Physicians have been an integral part of the Fighting Force, as they were indispensable for the treatment of the sick and wounded. The same position exists today. It is the duty of the Army physicians to keep the fighting forces physically fit, and in times of actual fighting to treat the sick and wounded as expeditiously as possible. In this way, they help to keep the morale of the soldiers at a high level, apart from protecting them from the effects of disease and injury.

While considering the subject of War and the Science of Medicine we realise more than ever, that Medicine must be practised with a spirit of service. This is the fundamental principle which guides us in our work. The study of the history of Medicine tells us, that at certain critical periods in history, it was the medical man's insistence, that the body and mind were together and indivisible, which kept the humanities linked to some extent with the purely scientific outlook. The development of ethical values and mastering of the physical world are both necessary for the progress of mankind. The need of ethics is specially imperative in the scientific world today, if we are to save the world from utter destruction, not only from atom and hydrogen bombs, but also from reckless and unprovoked aggression of one country against another.

Sir Walter Langdon Brown, the celebrated physician, once said:—

“In this puzzled frightened and unhappy age in which we find ourselves in this 20th century, which most unfairly blames the 19th century for all its distresses, just as children blame the parents, the medical man will have more and more to usurp the province of the priest, and try to bring mental and spiritual healing to a world, which finds the panaceas of organised religion inadequate for its needs.”

I am reminded of an incident in my own career which indicates, that even on the field of battle, while men are engaged in deadly conflict with each other, the feelings of compassion and mercy are not altogether forgotten. This gives us hope, that good may ultimately prevail, and mankind may be saved from utter destruction.

During the first World War (1914–1918), I was serving as Medical Officer to the 105th Mahratta Light Infantry, (popularly known as the ‘Kali Panchwin’) in Palestine, as part of the Egyptian Expeditionary Force, whose supreme Commander was Field Marshall Lord Allenby. In the last battle in Palestine in 1918, which resulted in our victory, my battalion went into action with the Third Lahore Division. It was trench warfare then, and we were fighting against the Turks, who were allies of Germany in those days. The battle began in the early hours of the morning some miles north of Jerusalem. Under very heavy artillery fire, we occupied our forward positions with the rest of the Brigade and then at zero hour, the forward march began. It was a tough fight. The Turks were very good fighters, but they retreated, and we went on occupying their trenches and thus the forward march continued. In my Regiment there were many casualties. I treated them in my Regimental Aid Post and then evacuated

them to the nearest Field Ambulance and the casualty clearing station. When the conflict was at its height the Brigade Commander went past my Aid Post and told me, "Look here. In the Turkish trench over there, there are a number of wounded Turkish soldiers. Will you please go and see what you can do for them." I quickly complied with these orders, and went and saw them and gave whatever medical aid I could under the circumstances, and then evacuated them to the nearest Field Ambulance, precisely in the same manner as our own wounded solidiers. I remember this incident still very clearly. It showed, that while the Indian and Turkish forces were engaged in fighting on the battlefield, we felt that the wounded Turkish soldiers needed as much care and attention as our own wounded, and the medical officer on duty gave equal attention to both. This is an illustration of the fact, that in the treatment of the sick and wounded, medicine knows no barriers whatsoever, political, racial, religious or any other.

NEGATIVE CONTRIBUTION OF WAR TO MEDICINE

War is a destructive process. It destroys what medicine has tried to build up. It destroys the best results of the physician's work. The élite of the nation, young men in the best of health, well-educated and nourished and immunised against a number of diseases, are killed or crippled.

War also affects the health of the civilian population adversely. It is a catastrophe that does not come alone. War, Famine and Pestilence have always been associated with each other. They do not come singly, but as a triad. The fields are destroyed, the granaries are looted, the

result of which is the prevalence of famine and deficiency disease.

In most western European countries, after the Industrial Revolution there was increase of population beyond the productive capacity of the soil, so that countries had to import food stuffs from outside. Thus, the blockade became a most formidable weapon during war with the result that famines and malnutrition developed. In the 17th century, Europe was devastated more by Pestilence and Famine than by actual war. This was also a contributing factor in the defeat of Napoleon in 1812. Scurvy played an important part in the sixth Crusade in the 13th century, as well as in the Armies of Napoleon in Egypt and Russia and during World War I in the British Army at Kut-el-Amara.

Every war was a fertile breeding ground for the development of epidemics. Large groups of people are massed together, filth accumulates, the public health machinery is upset, the physical resistance of the population is reduced by malnutrition or other factors, epidemics develop, and more than one war has been lost as a result of this. Greece was saved from Persian invasion in A.D. 492 by the outbreak of an epidemic, that decimated the Persian Armies. The Plague of A.D. 429, the character of which is still controversial, accelerated the downfall of Athens. An epidemic stopped the Huns before Constantinople in A.D. 425. The Black Death of A.D. 1348 had great repercussions on Europe's war history. England had defeated the French at Crecy and had conquered Calais after a siege of 11 months. The Plague forced them to withdraw and compelled them to sign a truce. The Kingdom of

Naples was saved by the Plague, which forced the Hungarian Army of occupation to a hurried retreat.

Typhus is another disease, which has also been one of the most dangerous enemies ever ready to defeat brilliant Armies, and to play havoc with the civilian population. The louse, which is associated with it, was still triumphant in the 18th century, and in almost every European War of the period, including the campaigns of Napoleon, more people died from Typhus than from wounds. In the second half of the 19th century, conditions changed, when soap was used extensively, and there was improvement in personal hygiene, so that Typhus gradually disappeared, and the Armies could destroy each other without interference. In Eastern Europe, however, the disease remained endemic, so that in the First World War it caused terrible devastations in Russia from 1918 to 1922.

Until quite recently more people died of disease than from battle wounds in War. In the Crimian War, the French Army of 309,000 men lost 20,000 from wounds and 75,000 from disease, a proportion of 1 to 4. In the Civil War in the U.S.A. Typhoid and Dysentery killed more people than the battles. The Franco-Prussian War of 1870-1871 was the first to reverse the proportion, at least in the German Army. Germany lost 40,881 men of whom 28,282 were killed by weapons, 346 died of accidents, and 12,253 from disease.

EFFECT OF WAR ON THE HEALTH STANDARDS OF THE CIVILIAN POPULATION

The civil population was affected by war in the old days chiefly by food shortages and epidemics. Today a new factor has come into play. Industrial production

during war becomes a major problem. And as the robust and healthy section of the nation, particularly men, join the Armed forces, the industries have to be carried on mainly by less healthy men-folk and women, which results in the lowering of health conditions and increase in the incidence of certain ailments, specially tuberculosis. Under normal conditions industrial expansion calls for increased medical facilities, but this is not possible in war, because the armed forces take up a large proportion of the country's medical personnel and equipment. You will remember, that after the First World War there was widespread epidemic of Influenza. After the Second World War there was similar danger. There was high incidence of Poliomyelitis in some of the Eastern countries.

In the present emergency in India, thus, it is imperative that we should plan our medical services, both civil and military, in such a way, that in cases of actual warfare the medical needs of the civil population as well as the Army are equally fulfilled.

WAR AS A CHALLENGE TO MEDICINE

Because of the disease and physical suffering caused by it, war is always a challenge to the science of medicine. Medicine is always facing a condition of emergency. In the fight against disease there is no armistice. During a war, the nation's medical resources are brought severely to test. But it also provides opportunities for experimentation, which results in new concepts and discoveries.

SURGERY

Of all branches of medicine, surgery is the one which has responded most to the war challenge. Since ancient

times, Army surgeons have accompanied the Armies. This happened in ancient Greece, when Greek Surgeons travelled with the Armies of Alexander the Great. They came to India in this way and met the physicians in our own land, from whom they learnt a great deal. Some Ayurvedic physicians were taken by Alexander with him back to Greece.

It should be borne in mind, that medical and surgical knowledge is transmitted not merely by means of books but largely in a practical way, when knowledge and experience are transmitted by personal contact between colleagues. In this process wars have played an important part.

To an Army Surgeon, the management of injuries received in fighting on the battlefield is a matter of vital importance. In carrying out this humanitarian task, since ancient times, he has made great contributions to the advancement of surgery. In the Indian literature of the Vedic period we find very accurate descriptions of the effects of haemorrhage and treatment of injuries. In *Atharvaveda* certain disciplines are laid down for the training of the Army Surgeon before engagement in battle. In the West, Celsus (25 B.C. — A.D. 50) gave a good description and treatment of haemorrhage.

War wounds were caused in the old days usually by arrows, spears, swords, and similar weapons. This went on up to the 14th century. These wounds healed in most cases by first intention without any suppuration, and the Surgeons considered that, that was the usual method of healing. But the conditions changed when fire-arms were introduced in the 14th century. The wounds caused by large-calibre lead bullets were primarily infected, and the

common belief was, that gunshot wounds were poisoned by gun powder, and had to be treated with cautery, or by pouring boiling oil into the wound. Ambroise Pare, a celebrated Army Surgeon, who is regarded as the Father of Modern Surgery, refuted this, as the result of the knowledge gained in the campaigns of Francis I against Charles V. He proved, that gunshot wounds healed much better without the treatment with cautery or boiling oil, which destroyed a good deal of the tissues. But even he regarded suppuration as a normal occurrence. The treatise of Ambroise Pare on gunshot wounds was published in 1545. It revolutionised War Surgery. He reintroduced the practice of ligaturing the arteries when performing amputations. In the field of obstetric operations he was a pioneer, and exerted a great influence on surgery as a whole.

In 1761 John Hunter took part in the expedition to Belle Isle, when the British Navy availed itself of his services. John Hunter was a great surgeon. He gained great experience then in the treatment of gunshot wounds. He wrote his well known book *A Treatise on the Blood, Inflammation and Gunshot Wounds*, which was published in 1794 soon after his death. The main significance of his book was, that he threw open the field of surgical observation and experiment to general medicine. Prior to this, surgery was more a craft than a science. Hunter's war experience had a great influence on his future research work.

Blood Transfusions were carried out in cases of severe blood loss in the Franco-Prussian Wars by the technique suggested by the Swiss doctor Roussel.

From the experience gained in the two World Wars we have learnt a great deal about the local and general effects



of war wounds. As Sir H. Ogilvie says:

War brings surgeons back to study the basis of their craft, the reactions of the human body to injury and infection. War is an integrating force, where teams work together for a common purpose and learn by each other's experience and mistakes to find the best answer to a problem.

The aim of the Military Surgeon is to help to achieve the objective of war by making a patient fit in the shortest possible time. There are problems of evacuation of the patient, availability of forward medical centres and centres where nursing can be provided. These vary in advance, defence, and retreat as well as in warfare in the jungle, desert or on high mountains. The surgeon has to adjust his work and technique according to the prevailing circumstance.

In ancient Rome Wars were responsible for the erection of hospitals. Greeks had no hospitals as such. Some patients were sometimes admitted by physicians in the guest-rooms of their own workshops, but there were no properly organised hospitals. In Rome, on account of practical considerations, special institutions were established for the treatment of the sick soldiers, so that they could again go back to the Army and engage in fighting. For this purpose Lazarettos were built. Some Lazarettos, like the one at Novaesium, were large institutions with many sick rooms opening on to large corridors, and large courtyards. The Military Hospital at Baden in Switzerland, was situated near a sulphur spring, the medicinal waters of which were used in the treatment of the wounded.

The problem of sanitation becomes very acute in time of war. In the 17th and 18th centuries many books were written on sanitation of camps and barracks and general

problems of Military Hygiene. Special attention was paid to the soldier's diet; and meat extracts were prepared to feed soldiers during campaigns.

Medical Research also comes definitely into the picture. In this connection, I may refer to the work of Surgeon William Beaumont in the U.S.A. In 1822 in the Military Unit to which he was attached there was an accidental discharge of a musket when St. Martin, a voyageur, was wounded in the stomach. He recovered with a permanent gastric fistula. Beaumont saw the extraordinary possibilities for investigation of the gastric juice, which escaped from the fistula. He made a series of studies on St. Martin, which settled for ever the existence of a solvent fluid in the stomach capable of action on food both outside and inside the body. He enriched our knowledge of the processes of digestion. He pursued the subject persistently for 8 years. William Beaumont is a bright example in the annals of the Army Medical Department. The opportunity presented itself, the observer had the necessary mental equipment and endurance to carry to a successful conclusion a long and laborious research.

In India we have a similar example in Sir Roland Ross, who carried out his epoch making researches on the part played by the anophelene mosquito in the transmission of Malaria. He did this work while serving in the Army in the Indian Medical Service in 1897 in Hyderabad (Dn) and again in Calcutta. On the day he made the discovery he wrote the following verse:—

This day relenting God
Hath placed within my hand
A wondrous thing; and God
Be praised; At His command

Seeking His secret deeds
 With tears and toiling breath
 I find thy cunning seeds,
 O million-murdering Death.
 I know this little thing
 A myriad men will save
 O Death, where is thy sting?
 The victory, O Grave?

War is not the choice of those who passionately long for peace. It is the choice of those who are willing to resort to violence for political advantage. While speaking on "War and the Science of Medicine" at this juncture, I would be failing in my duty, if I did not refer to the urgent need of supplying adequate medical aid to our Armed forces, Army, Navy and Air Force. I am sure, we all realise this and will see, that the medical profession rises to the occasion and gives all possible help both on the military and civil side at this hour of crisis in our history.

The international situation in the world today is such, that a War might break out at any time. If, God forbid, a War does occur there is not the least doubt, that some countries will resort to the use of Atom and Hydrogen bombs, for which one should be prepared. Apart from this, there are certain conditions which our Armed Forces would have to face on our northern frontiers while fighting at high altitudes.

The medical problems from high altitudes result from increasing hypoxia with increase of altitude. Their intensity depends on the rapidity with which an individual is subjected to hypoxia, its degree and duration. They may be briefly enumerated as follows:

1. ACUTE MOUNTAIN SICKNESS:

Below 11,000 ft. there are usually no symptoms. Between 11,000 and 14,000 ft., headache, vomiting and insomnia are marked. At heights greater than 14,000 ft. headache, depression, apathy and drowsiness occur. Memory is impaired, appreciation of time is altered and danger may go unheeded. On the other hand, there may be excitement, loss of control and dangerous behaviour.

Acute mountain sickness can be prevented by gradual acclimatisation, which can be brought about by gradual ascent with suitable halts for restful sleep at night.

2. ACUTE PULMONARY OEDEMA:

This is a serious ailment and can be a fatal complication of rapid exposure to high altitude. Its pathogenesis seems to be pulmonary venous constriction induced by hypoxia. This results in elevation of pulmonary capillary pressure without rise of left ventricular pressure. The physical signs include cyanosis, tachycardia, hypotension, and pulmonary rales. There is no evidence of cardiac enlargement, heart failure or pneumonia. Prevention consists in gradual acclimatisation, avoidance of physical exertion for a couple of days after arrival.

3. CORONARY INSUFFICIENCY:

Coronary insufficiency of hypoxia origin is usually found in individuals who have been subjected to severe strain at high altitude.

4. CHRONIC MOUNTAIN SICKNESS:

Mild hypoxia after acclimatisation may produce its effects insidiously after a long latent period, which usually exceeds 6 months. Dimness of vision, loosening of teeth,

progressive diminution of work, loss of weight, flatulence, indigestion, loose bowels, anaemia, thyroid deficiency, severe and fatal infections, lack of interest, insubordination may all be encountered. These symptoms usually disappear within 3 to 4 weeks of move to the plains.

5. SEROCHE-MONGE'S DISEASE:

This has all the chief clinical features of polycythaemic vera including plethora, vascular occlusions in various vital organs, ulcerations and bleeding from the gastro-intestinal tract and sometimes cardiac failure. If untreated, it results in death. The condition, however, unlike polycythaemia vera is completely reversible on transferring the individual to sea level.

6. PULMONARY HYPERTENSION:

Arterial oxygen saturations below 80% elevates pulmonary arterial pressure. This results from involvement of both veins and arterioles. As a result of increased pulmonary vascular resistance, there is right ventricular hypertrophy, breathlessness and oedema of dependent parts.

7. VASCULAR THROMBOSIS:

Vascular Thrombosis may be arterial or venous and usually affects the peripheral vessels. Mesenteric and cerebral vessels may also be involved.

To these conditions I may add the effect of cold, the incidence of Frost Bite, which is not an uncommon occurrence on exposure to temperatures at or below the freezing point at high altitude. It is recorded, that during the active operations in Korea in the winter of 1950-51, there were 8,000 cases of Frost Bite amongst the American troops. India too had similar experience during the recent

fighting in the Himalayan mountains against the Chinese.

The inducement of surgical anaesthesia at altitudes above 14,000 ft. is also important. I understand that the development of electric Narcosis for this purpose is in progress and good results from it are expected.

MEDICAL PROBLEMS IN INDIAN ARMED FORCES IN WORLD WAR II

I may describe briefly some of the medical problems which our Armed Forces in World War II had to face. They are still fresh in the memory of many of us. It has been observed, that in every War in the past the casualties from disease far outnumbered those resulting from war wounds. This was also the case in the Eastern Theatre of World War II. In the early years of the war, most of the trained personnel and Reserve Medical Supplies were allocated to the Middle East, Iraq and Persia. The Japanese victory in South East Asia and the withdrawal of Indian and British troops along with about 500,000 civilians from Burma in 1942 created a grave situation. The sickness rate increased considerably. The hospitals were packed to the utmost capacity and the medical services were strained to the extreme. Subsequent fighting was carried out on the Indo-Burma Front, notorious for ill-health and disease. It contains some of the most highly malarious regions in the world. Research Teams were established to study urgent problems. For every soldier wounded, on the Indo-Burma Front, 204 were sick in 1942 and 142 in 1943. By 1945 this ratio between battle and non-battle casualties was reduced to 1 : 13.

Malaria was the greatest problem in Burma and S.E.O.A.C. It caused a large number of casualties. Dy-

sentery and diarrhoea were the most common ailments after Malaria. Scrub Typhus came into prominence when there was concentration of troops in Assam and other mite infested regions. Infective hepatitis, anaemia, malnutrition, venereal disease and certain psychiatric disorders were some of the other ailments which caused much concern to the Medical Authorities.

Effective preventive measures were adopted against them. The use of D.D.T. on a large scale assisted in the control of Malaria and also fly borne diseases. The results of the use of D.D.T. and Sulfa drugs were reflected in the reduction of incidence of dysentery. The valuable use of T. A. B. inoculation of all troops resulted in the reduction of Typhoid fever. Rigid control of water supplies and chlorination of water contributed to the control of Typhoid and gastrointestinal disease. Yellow fever was kept out of India in spite of the considerable traffic between India and zones where this disease was endemic. For this purpose control measures were introduced at the air-ports. The introduction of Sulfa drugs and Penicillin during the war was really a great advancement in the treatment of many septic ailments.

One lesson that emerges from this is that the study of Medical history and medical geography are essential for the success of any campaign. The information on physical, social, and epidemiological factors is of the greatest importance before any adequate medical appreciation can be prepared.

War, as I have said before, is a great challenge to medicine, greater than to any other Science, because the motive which primarily guides men and women into the field of Medical Research, is a desire to reduce human

suffering and to prevent untimely death. This is precisely the motive during war time. The history of War is a race between the instruments of physical destruction and the advancement of Medical Knowledge for saving the lives of the wounded and the sick. I feel, that no one with any knowledge of history of disease can claim that science is concerned only with the improvement of instrumental destruction and no advance is made in medicine during war. The advance in medicine during war is equally great. This is subsequently reflected in the promotion of Welfare of the civil population after peace is restored. A good example of this is the organisation of the Health Services in England and the U.S.A. as a result of the World Wars. In the field of Therapeutics, I may refer to the introduction during war of antibiotics, sulfa drugs, anti-malarials, which are really a great boon to suffering humanity. The same applies to Public Health measures.

HUMANITARIAN ORGANISATIONS ORIGINATING FROM WARS

There are certain humanitarian organisations which are the outcome of Warfare, namely the Red Cross, Nursing, World Health Organisation, the Venerable Order of the Hospital of St. John of Jerusalem.

THE RED CROSS

In 1859, the French and Italian Armies under Napoleon III were struggling to free Italy from Austrian domination. J. Henri Dunant was a Swiss businessman from Geneva, who was about 31 years old at the time. He wished to interview Napoleon III to obtain from him grants of land for a number of corn-mills he wanted to set up in Algeria. He went to Northern Italy for the purpose. He arrived at the town of Castiglione, on the eve

of the battle of Solferino. This was on 24th June 1859. The slaughter there was frightful. Blood was flowing on all sides. Out of 300,000 men who were engaged in mortal combat, 40,000 were dying. Prior to this Henri Dunant had no idea what war was like. He forgot his main mission of interviewing Napoleon, and of his corn-mills. He did not know which way to turn, for everywhere in the streets of Castiglione injured men were screaming and there was no one to look after them. He was deeply touched. He improvised a voluntary aid service, and for three days worked incessantly without sparing himself. It is said, that he personally attended to over 1000 wounded Frenchmen, Italians and Austrians. When some people were surprised to see that he attended on the enemy also he said to them — "We are all brothers."

On returning to Geneva he wrote a book *Un Souvenir de Solferino*. This was a very deeply moving book and gave an account of what he had seen on the battlefield. It awakened the conscience of the rulers of all countries in Europe. He travelled all over Europe, and strongly emphasised the idea, that each country should create a society to succour wounded soldiers and that this society in the event of War should aid Military Medical Personnel. He was enthusiastically supported. King John of Saxony, whom Dunant saw, remarked:

"A nation that does not take part in this humanitarian work will be censured by European public opinion."

It was in this atmosphere, that a committee of five, consisting of General Guillaume-Henri Dufour, a veteran of Napoleonic Wars, Gustav Moynier, a well-known lawyer, and two doctors Theodore Maunoir and Louis Appia, and J. Henri Dunant, was formed for the first time.

It met on 17th February 1863 under the chairmanship of General Dufour, and gave themselves the name of "Permanent International Committee for Aid to Wounded Soldiers." On 26th April 1863, the Committee decided to convene an International Conference with the aim of "*remedying the shortcomings of Medical Services for Armies on the field.*" It met on 26th October 1863 and several countries sent delegates to it, both doctors and diplomats. Subsequently another conference was held on 22nd August 1864, when the convention for the amelioration of the wounded in the Armies in the field was signed. Thus was born the celebrated Geneva Convention. It was signed originally by 12 countries, but its signatories very wisely decided to have the Convention open for ratification by all States that had not signed it. The delegates also agreed on the adoption of Red Cross on white background as the protective emblem for medical personnel and for the sick and wounded on the battlefield.

In all these negotiations the conclusions arrived in Henry Durant's book *Un Souvenir de Solferino* were the guiding factors. This book was really responsible for the origin of the Red Cross Society. The author described in it, as I have said before, very clearly and with great emphasis the distress which he had witnessed amongst the wounded on the battlefield at Castiglione in 1859, when there was no provision for their relief whatsoever. In later years of life Henri Dunant received recognition for what he had achieved. Moscow awarded him the 1897 International Congress of Medicine Prize. In 1901, he was awarded the first Nobel Peace Prize. He expired peacefully on 30th October 1910.

Today 91 Nations are partners to the Geneva Convention, including India.

The Red Cross is essentially a humanitarian organisation. It recognises no difference of race, religion, or politics. It promotes International goodwill and friendliness. It was started, as you see, out of a strong and deep-seated human instinct to be merciful and to alleviate suffering of the wounded on the battlefield, but during the last 100 years of its existence, its activities have spread over many new fields, not only in War, but in peace also. Its duty is to hold itself in readiness for such action and to give succour to all who are in peril.

The Red Cross Societies today are functioning more and more as auxiliaries to the Army Medical Corps and Civil Defence Services. The role which falls to them in respect of the civilian protection during war depends on the adoption of the 1949 Geneva Convention. By 1954 a large number of countries had ratified these conventions. On humanitarian grounds, it is essential that all countries should keep themselves ready at all times, and under all circumstances to protect the civilians in case of war in accordance with these basic principles.

Some of the methods employed in warfare nowadays are more devastating than ever before, as in Nagasaki and Hiroshima in 1945. In his report to the First International Conference on Atomic Pathology, Dr. Vencken stated, that for efficient relief, to be organised at Hiroshima, it would have been necessary to have a medical and nursing staff of about 170,000 persons with tons of blood for transfusions and medicaments at their disposal. A situation such as this may even be beyond the capacity of the State to manipulate expeditiously, but it has to be

kept in mind, and we should be prepared for it. In all such measures, there should be complete co-operation between the Government Medical Services, both Military and Civil and Red Cross and St. John's Ambulance Association.

NURSING

Nursing as it is known today has developed during the last 100 years. It was Florence Nightingale (1820-1910) who was the pioneer in this field and gave great impetus to it. She was born in Florence on 15th May 1820, but her childhood was spent in England, chiefly in Derbyshire. Her most ardent desire was to use her talents for the benefit of humanity. She learnt Nursing and hospital management at the Institute of Protestant Deaurinesses at Kaiserwerth, then in Paris hospitals under the charge of Sisters of St. Vincent de Paul. In 1854 England was engaged in the Crimian War. Miss Nightingale went there with a staff of 37 Nurses, partly volunteers, partly professionals trained in hospitals. They reached Scutari in time to receive the Balaklava wounded. History records, that Miss Nightingale's work at Scutari is one of the brightest pages in English annals. She gave herself body and soul to the nursing of the sick and wounded. Gradually the effects of the measures taken were seen in the lowered death rate. On her return to England a sum of £50,000/- was raised in recognition of her services. She gave this money to St. Thomas's Hospital, London, to found the Nightingale Home for the training of Nurses at St. Thomas' and Kings College Hospitals. She also turned her attention to the question of Army sanitary reform and Army hospitals and to the work of the Army Medical College at Chaltan. She had a close knowledge of Indian conditions from the

reports received from every Military station in India. In 1865 on a request from a Sanitary Commission for Bengal, she drew up in some detail, "Suggestions on a System of Nursing for Hospitals in India," which proved very helpful.

WORLD HEALTH ORGANISATION

The League of Nations arose out of the agony of World War I (1914-1918). At the very outbreak of the War, Sir Edward Grey voiced a belief, that the only way out was the formation of the League of Nations. Mr. Asquith, as Prime Minister, repeated this again and again. It was taken up by the Americans and the Neutrals. President Wilson became the mouthpiece of the movement, so much so, that a League was put in the fore-front of the Allies War Aims.

The League was established in 1919. It was built on the prevailing tendencies to organise peace and to give formal expression to the interdependence of modern nations. One of the organisations set up by the League was the Health section of the League of Nations. This Section was more successful than the League itself and is justifiably the precursor of the World Health Organization which exists today.

The United Nations came into being after the Second World War in 1945. It has 4 purposes:—

1. To maintain international peace and unity.
2. To develop friendly relations among nations, based on respect for the equal rights and self-determination of peoples.
3. To co-operate in solving international problems of an economic, social, cultural or humanitarian rights and fundamental freedom for all; and

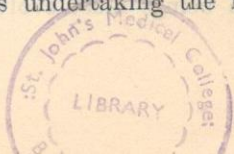
4. To be a centre for harmonising the actions of nations in attaining these common ends.

The World Health Organization is one of the specialised agencies of the United Nations Organisation.

The attainment by all peoples of the highest possible level of health is the purpose for which World Health Organisation was created. Some of its functions are:—

- (a) To act as co-ordinating authority on international health work.
- (b) To stimulate and advance work to eradicate epidemic, endemic and other diseases.
- (c) To promote the improvement of nutrition, housing, sanitation; recreation, economic or working conditions and other aspects of environmental hygiene.
- (d) To promote maternal and child health and welfare.
- (e) To promote research in the field of health.

By promoting all measures for the improvement of health, W.H.O. as well as the United Nations International Children's Emergency Fund (UNICEF) is making a great contribution to world peace. There is a world-wide co-operation in this field, more so here than in any other activity of the U.N.O. Its membership is open to all countries. Each of its 115 member states contributes yearly to its budget, and each is entitled to the services and aid that W.H.O. can provide. It has organised extensive campaigns for the eradication of Malaria, Tuberculosis, Yaws, Influenza, Poliomyelitis, Cancer etc. It is also paying special attention to the hazards caused by the use of ionizing radiation whether from X-rays, radioactive isotopes or other sources and the growing industrial use of atomic energy. Thus W.H.O. is undertaking the respon-



sibility to keep Governments forearmed against potential dangers of this kind. It also collaborates with the International Labour Organisation (I.L.O.) to improve occupational health.

ST. JOHN AMBULANCE ASSOCIATION AND THE ST. JOHN AMBULANCE BRIGADE

St. John Ambulance Association and St. John Ambulance Brigade are part of the organisation of the Venerable Order of the Hospital of St. John of Jerusalem which was founded in Jerusalem probably during the First Crusade. The Indian Council of the Association was set up in 1912. It received great impetus during the two World Wars. It has helped a great deal in training civilians in Home Nursing and First Aid. With the onset of Emergency in the country, this work has been expanded a great deal. The First Aiders and the Nurses thus trained are utilised for service in the Civilian and the Military Hospitals.

Thus, you see, that out of bloodshed on the battlefield certain humanitarian organisations have emerged. War also does help as I have said, the advancement of Medicine. In the stress and strain through which we are passing today we see the Medical application of Electronics, the use of radioactive isotopes, the development of Aviation Medicine, Aerospace Medicine and Radiation Medicine, the sustenance of life at high altitude which hitherto was not comprehended. As an auxiliary, the use of enzymes and genetics is more and more in the picture in explaining various disease processes. War, however, is essentially a destructive process. It is a mixed blessing so far as the progress of Medicine is concerned. Human beings must evolve peaceful methods for settling

their differences and quarrels, rather than through bullets, atom and hydrogen bombs. Otherwise there is danger that mankind may suffer irreparable loss. In this vital process of healing and repair and mutual understanding, I sincerely trust that during this Scientific Age the Science of Medicine will play an effective and decisive role, and bring "mental and spiritual healing to a world which finds the panaceas of organised religion inadequate for its need." This is the urgent need of the hour in the national and international upheavals today.

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III

GROWTH OF MEDICAL SCIENCE IN INDIA*

May I at the outset offer you my best thanks for so kindly inviting me to inaugurate the Scientific Session of this Conference. This is an honour, that I deeply appreciate.

The Scientific Session is the most important part of all Conferences of this nature, for it offers an excellent opportunity to the scientific workers for an exchange of views, which is so stimulating for the advancement of medical science.

The term 'scientific' in connection with the session reminds us of the basic fact, that medicine is a science. It is in fact the oldest of sciences, as old as civilization itself. It has, however, not always been so. For a long time it has been a mixture of empiricism, superstition, and observation in varying proportions, and it has been closely linked with theology. A change, however, took place in the 15th and 16th centuries in Europe, when there was a transition from middle ages to modern times. This was the dawn of the movement known as the renaissance, and modern medicine may be said to have advanced since then.

What happened during the renaissance, we may ask, which gave such an impetus to the growth, not only of medicine but of science generally, resulting in the scientific age as we witness today?

*Inaugural Address delivered at the Scientific Session of the 5th Delhi State Medical Conference at Delhi, on 5th December 1958.

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The renaissance consisted of a revival of learning. It commenced in Italy and spread over the continent. It was a new spirit, a new desire for knowledge and progress, which affected every sphere of life. Unquestioning acceptance of authority of the written word, gave way to criticism, personal observation and experimental enquiry; and medicine, which had scarcely progressed since the days of Galen and Hippocrates, was quickly enriched by new discoveries. This change took place gradually. It is important to realise, that mankind is slower to change its attitude of mind than many of us imagine.

There is a definite contrast between medieval and modern times. An atmosphere hostile to free enquiry gave way to one, in which science could live and flourish. During the middle ages the Church was the sole repository of culture. But in the 15th and 16th centuries there began an enquiry of nature, which led to the development of modern medicine and science, and through the invention of printing, the new culture, which had started, became a general possession of a much larger number of people. 'With a sharp gesture of impatience' says H.A.L. Fisher (the Oxford historian): "Europe turned away from the vast literature of commentaries and glossaries, which the pedants of later middle ages had inscribed in letters of opium on tablets of lead." This was the free atmosphere, illuminated by a new spirit of adventure, enquiry and independence, and which cherished views of life based on freedom of thought, and right of the individual's conscience.

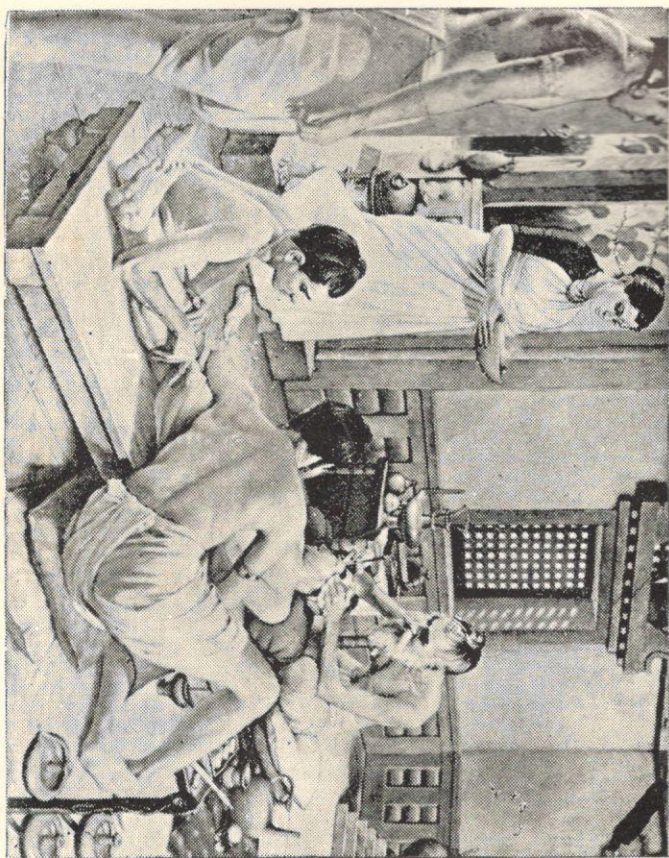
The man, who revolutionised medicine at this time, was Andreas Vesalius, born in Brussels in 1514, who became professor at Padua University at the age of 29, and who Galen, whose classical medical teachings were then widely

Galen, whose classical medical teachings were then widely current throughout the continent. He wrote a book *De Humani Corporis Fabrica*, based on dissections of the human body, carried out by himself under great difficulties, and which according to Sir William Osler is 'the greatest book ever printed from which modern medicine dates'.

There are many illustrious names of physicians and other scientists, who had caught the spirit of the renaissance, and made many contributions to scientific medicine, namely William Harvey, Thomas Linacre, Laennec, Edward Jenner, Louis Pasteur, Joseph Lister and many others. They are all well known to you. Medicine made great progress in the 18th and 19th centuries, but the rapidity with which it is advancing in the 20th century is beyond the imagination of any of the previous generations.

It is this spirit of the renaissance, which came to India through the contact with the West, which has been responsible for the development of modern medicine here, and evidence of which we see in our scientific session here today.

In India, we enjoy a noble heritage of spiritual wisdom, philosophy, art, literature, science and specially the science and art of medicine. We inherit the wisdom and knowledge of the ancient Ayurveda, which had reached the height of its glory during the Maurya and Gupta periods of our history. The Greek system of Medicine came here with Alexander's Indian Expedition (327 B.C.) and again via Arabia with the Mohammadians as the Unani System. We are also the inheritors, as I have just mentioned, of the spirit of the renaissance and of the modern scientific revolution by virtue of our intimate contact with the West, which dates from the 15th century onwards. We had the



SUSHRUTA

Portuguese, the Dutch, the British, the French and the Danes here, but so far as medicine is concerned we are mainly concerned with the British. The first medical officers in the employ of the East India Company early in the 17th Century were surgeons on board the ship. Subsequently, they organised medical services for the army and the civil population. Instruction in modern medicine was started in the early part of the 19th century in Bengal. In 1822, the first medical school was started in Calcutta. Since then there has been a steady increase in the number of institutions for training in medicine, and the standard of instruction has also been improving. The part played by the Medical Council of India in developing and improving medical education in the country has been most creditable.

So far as medical research is concerned, India has a good record. At first some medical officers here and there took up research individually and made important contributions to Medicine. Amongst them I may mention the names of Ronald Ross whose work on the part played by mosquitoes in the transmission of Malaria is well known; and Haffkine who prepared the plague vaccine in Bombay. There were many other such pioneers in the field.

Under the influence of Pasteur and Koch the research work here in the early stages was mainly on communicable diseases, and certain bacteriological laboratories were established for this purpose, namely the Central Research Institute, Kasauli; King Institute, Guindy, Madras; the Haffkine Institute, Bombay; Pasteur Institute, Shillong; the School of Tropical Medicine, Calcutta; All India Institute of Hygiene, Calcutta, and others. In order to encourage medical research the Indian Research Fund As-

sociation was started in 1911. This was converted into the Indian Council of Medical Research in 1949, which has been highly instrumental in stimulating medical research in the country. It is a happy sign of the times, that research now goes on not only in the research institutes, but also in the medical colleges. In fact, a special effort has been made to encourage it there, for teaching of medicine must be carried out in an atmosphere of research, so that the young men develop at an early period a sense of intellectual curiosity and independence of thought, which are absolutely essential for original medical research. A great many teachers in the medical colleges are now imbued with a spirit of research and are doing useful work. The Indian Council of Scientific and Industrial Research and the Indian Council of Agricultural Research are also helping in this matter, the latter especially in regard to indigenous drug development.

It seems to me, that we in India are passing through a period of renaissance, when there is an intense desire to revive our past culture, and also to keep abreast of and to make contributions to modern science, including medicine. This is very natural. History teaches us that we have a special genius for bringing about integration and synthesis of different ideologies. We should try to synthesise all that is best in our ancient medical heritage and modern medical science. It is important to realise, that medicine is one and indivisible. It does not admit of any divisions into so-called 'systems'. Medical science is universal in its scope and outlook, and many countries in the east as well as in the west have made contributions to it in the past and are doing so now.

This is just a brief review of the prevailing conditions. Although good progress is being made, there is no room for complacency here, for the health conditions in India are still very unsatisfactory and a great deal has yet to be done.

1. PREVENTIVE AND SOCIAL MEDICINE:

Special stress should be laid on the study and practice of preventive and social medicine, in view of the fact, that in India we have a large number of diseases which are preventable and should be prevented. Curative and preventive medicines are inseparable, and we should all become public health minded. While dealing with the sick, we should keep the preventive aspect of disease in the forefront of our deliberations. It is gratifying that in some colleges chairs of preventive and social medicine are being established.

2. MEDICAL RESEARCH:

This should be pursued with increasing vigour especially in the teaching institutions. Medical education and medical research are inseparable. In the evolution of medicine, the science of physics, chemistry, physiology, biochemistry, and biophysics have made great contributions. It is by the application of the knowledge gained by these basic sciences to problems of disease, that progress has largely taken place. I take this opportunity to make a special plea for the study and research specially in physiology, biochemistry, and biophysics, subjects in which I am personally interested. They are the very foundations of medical science. It is also important, that the medical colleges should be brought in close touch with the university de-

partments of chemistry and physics, as well as the humanities, for humanities form an integral part of the science and art of medicine.

It is important to realise, that the scope of medicine is now more comprehensive than every before. It is not merely an art of prescribing pills, powders, mixtures or injections or even performing a surgical operation when necessary. These things are of course necessary, for they are an essential part of our armamentarium. But the aim of medicine now is to offer medical relief on the widest possible scale to every citizen in the land, in which all the facilities required for treatment and prevention of disease, as well as for the promotion of positive health are provided for all, irrespective of their ability to pay for it. We are not studying disease and ill-health in relation to social and physical environment. In order to study the scope of medicine in any country we must study its social, cultural, economic, scientific and historical aspects. It includes the practice, teaching and research in medicine in all its roots and branches on the widest possible scale. And it should be practised with a spirit of service, with the highest ethical principles in view.

Finally, it is because medicine is cosmopolitan and universal in its outlook, that it is also instrumental in promoting international good-will and peace. Descartes said: "If ever the human race is raised to its highest practical level intellectually, morally, and physically, the science of medicine will perform that service."

On looking through the programme of this scientific session, I find that we have quite a number of important scientific problems which are going to be dealt with by many distinguished physicians. We look forward to the

speeches and discussions with great interest. They are bound to be most instructive and stimulating. Such scientific sessions have become a normal feature of all conferences of the Indian Medical Association in different parts of the country, and they are making a good contribution not only to the discovery of new knowledge, but also in disseminating knowledge of the discoveries already made. They have thus an important educative value. I congratulate all those who will participate in the work of this scientific session and wish them all the very best of success.

And now I have great pleasure in inaugurating the Scientific Session of the 5th Delhi State Medical Conference.

During the session the Association made the following one outstanding achievement being the publication of the Journal of the Physicians of India. This journal will offer an excellent medium for exchange of views and will make known our individual experiences and scientific work. I am sure in due course it will rank amongst the best scientific journals. I wish the volume every success.

Many distinguished members of the Medical profession have shown this President's Clinic in the past. I am well aware of my short coming. In this assembly of such well known physicians coming from all parts of India it is a certain danger of repetition. I feel however the responsibility is on me to make it as the best as I can. I feel that I have distinguished in the past the session of Delhi. I am sure that many years I will remember that I have your full co-operation and assistance in the discharge of the onerous duties which you have assigned to me. With

Yours faithfully,
President, Indian Medical Association
Delhi, 1st Dec. 1933.
Reprinted from Medicine Vol. 1 No. 1, 1934.

IV

THE PHYSICIAN IN THE MAKING*

I deeply appreciate the great honour you have done me by electing me President of the Association of Physicians of India this year. I am sincerely grateful to you for it.

It is a special pleasure to me to be a successor to my esteemed friend, Dr. G. Coelho, who occupied this exalted position with such distinction during the year, which has just ended. He commands universal respect and affection in the Medical profession, especially in the field of Paediatrics. During his regime, the Association made good progress, one outstanding achievement being the publication of the *Journal of the Physicians of India*. This journal will offer an excellent medium for exchange of views and will make known our individual experiences and scientific work. I am sure, in due course it will rank amongst the best Scientific Journals. I wish this venture every success.

Many distinguished members of the Medical profession have adorned this Presidential Chair in the past. I am well aware of my short comings. In this assembly of eminent physicians, coming from all parts of India, it is with a certain degree of trepidation, that I assume the responsibilities of Presidentship, as the Providence has so ordained, that I have drifted away from the actual practice of Medicine for a good many years. I feel, however, that I have your full co-operation and assistance in the discharge of the onerous duties, which you have assigned to me. With

*Presidential Address at the Annual Conference of the Association of Physicians of India, Calcutta.

Reprinted from Medicine Vol. 1 No. 4, May 1954.

this assurance, I can face with courage and confidence the task, which lies ahead.

We are thankful to Hon'ble Dr. B. C. Roy, the Chief Minister of West Bengal, for inaugurating this Conference. We are indeed very proud and happy, that a physician of the distinction of Dr. B. C. Roy is the Chief Minister of West Bengal. The duties of this high office are by no means easy, but he is discharging them with conspicuous courage and success, and commands the affection and esteem of all those, who come into contact with him. We are indeed honoured to have him with us here today.

The Association of Physicians is meeting today at a spot, which is memorable in the annals of the History of Medicine, for it was here, that the first Medical College was established in India by the East India Company. The torch, which was then lighted, has shed its lustre in all parts of the country for well over a century.

Bengal has played a very honourable part in the spread of Medical education and Medical relief in the country. It has produced many distinguished Indian Leaders of the Medical profession, notably Dr. Nilrattan Sarkar, Dr. U. N. Brahmachari and others. Calcutta has the proud privilege of possessing 4 Medical Colleges, as well as the All-India Institute of Hygiene and the School of Tropical Medicine, where excellent work is being done. West Bengal has thus made and is making a fine contribution to the advancement of Medical Science and the training of Physicians, including various specialities in Clinical and Preventive Medicine, of which all of us are proud.

It seems to me, that this is a suitable opportunity for us to recall once again the objects of our Association, and



to resolve to do all we can to fulfil these objects. Of the 24 objects let me specially mention the following:—

(1) To encourage and advance the knowledge, study and practice of the Science of Medicine in all possible ways.

(2) To encourage research including experimental work in the Science of Medicine.

(3) To make rules prescribing standards of professional conduct of members of the Association.

(4) To promote *esprit de corps* among persons studying or practising the Science of Medicine and to promote good feelings between them and members and the general public or public authorities.

Speaking generally, these objects refer to Medical Education, Medical Practice, Medical Research and Ethical Standards to be observed in the practice of Medicine. Obviously these are matters, in which all of us are deeply interested, and in which we can make a substantial contribution. In the course of our professional work, we have opportunities to fulfil these objects and it is up to us to utilise such opportunities to the fullest.

Of all these objects, I am confining my remarks mainly to the preparation and training of the physician, which you will agree is of the greatest importance and is one on which the fulfilment of the other objects depends. This is a subject, which is very near my heart, as I have devoted a considerable part of my professional career to Medical Education.

MEDICAL EDUCATION:

Medical Education on modern lines may be said to have been introduced in this country in the year 1835, when

the first Medical College was started in Calcutta. Today we have about 30 Medical Colleges distributed in all parts of the country, with an annual output of about 2,000 medical graduates. These Colleges are affiliated to different Universities; but the standard of Medical Education is controlled by the Medical Council of India, which was established by the Act of 1933. This Council is responsible for maintaining standards of medical education in the Indian Universities as well as for dealing with the question of recognition of foreign medical qualifications in this country.

With the recent expansion of medical education, we must ensure that there is no lowering of the standards. They should be maintained at a high level.

Medical education aims at producing physicians, who are not only skilful, but also wise in the application of the Science and Art of Medicine. In order to become wise, the physician must understand the physical and social setting, in which the people, who come to him as patients, live. The study of Medicine should thus embrace the study of life in all its aspects—physical, psychological and social. The physician should have a clear and comprehensive appreciation of the place of such patterns of Society in the life of the individual.

A physician, as you know, is a highly privileged person. The obligation placed on him is, that he should attack disease and suffering at their source and remove as far as possible every aggravating cause of human disability and distress, and promote health in its fullest sense.

Medical education in any one area must to some extent be related to the health needs of the population. For ex-

ample, a doctor practising in England would not need to know much Tropical Medicine, while this knowledge would be essential, if he were to practice in India.

Speaking from a historical point of view, the system of medical education in India is based chiefly on the English pattern, which is very sound. It is, however, not possible to transplant bodily the ideas, methods and organisation of teaching of one country to the soil of another. We can, however, learn valuable lessons from other countries. The methods adopted elsewhere could be suitably modified or adapted to a new environment.

I would now relate some of the points which need emphasis in our Medical education:—

1. *History of Medicine*: In view of the prevalence of certain ancient systems of medicine in India e.g., Ayurvedic and Unani, it is essential, that the study of the history of medicine should be introduced in all Medical Colleges in the country. This subject is more necessary here, than either in England or the United States, in view of the fact that in those countries there are no ancient systems of medicine to compete with the modern. It is necessary to impress on the mind of young undergraduates, that medicine is one and indivisible, and that modern medicine has grown out of these ancient systems. The study of the history of medicine will help in the task of the unification of medicine in India. Besides, history and research are so inseparable, that one without the other is unthinkable.

The study of the history of medicine in India has been neglected so far. It is of special interest, as believe, India has made as important a contribution to Medicine, as Greece and Rome.

From the earliest times, says Abraham Flexner, "Medicine has been a curious blend of superstition, empiricism, and that kind of sagacious observation, which is the stuff out of which ultimately science is made. Of these three strands—superstition, empiricism and observation—Medicine was constituted in the days of the priest-physicians of Egypt and Babylonia; of the same three strands it is still composed. The proportions have, however, varied significantly; an increasingly alert and determined effort, running through the ages, has endeavoured to expel superstition, to narrow the range of empiricism, and to enlarge, refine, and systematise the scope of observation. The general trend of Medicine has been away from magic and empiricism and in the direction of rationality and definiteness...."

The history of Medicine really comprises the history of civilisation. In this study we shall find that man's progress has been by a process of slow evolution, and that on this onward path he has made many mistakes and has met with many failures as well as successes.

It may be made clear, however, that although the study of the history of Ayurvedic and other ancient systems of medicine is strongly recommended, as well as an extensive programme of research according to modern scientific methods in many drugs used in these systems, it is not suggested that modern scientific medicine should in any way be neglected. This of course should be enthusiastically pursued and further developed.

2. *Preventive and Social Medicine*: Special stress should be laid on the study of Preventive and Social Medicine in view of the fact, that in India we have a large

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number of diseases which are preventable and should be prevented. Curative and Preventive Medicines are inseparable, and instruction in these two aspects of Medicine should be suitably integrated, so that the young graduates become public-health minded. While dealing with the sick, they should keep the preventive aspect of disease in the forefront of their deliberations. It is gratifying to know that some Colleges have established Chairs of Social Medicine.

3. *Internships and Resident Appointments:* All young Physicians after graduation should hold a Resident appointment in an approved hospital for a specified period. This should be made compulsory. The compulsory internship recommended by the Medical Council of India is also very desirable and should be adopted by all the Universities.

In this connection, it is interesting to recall, that even in 1221 at Salerno the Emperor Frederick II decreed, that no one should study Medicine, unless *inter alia* his 5 years' medical course had been followed by an additional year of practice under the supervision of an older and experienced physician.

It should be possible to weld all the teaching hospitals in our big cities, especially where there are two or more Medical Colleges into one main group for imparting post-graduate instruction. Apart from teaching hospitals attached to Medical Colleges in the city, it is necessary that other selected hospitals situated in the Districts should be upgraded and used for teaching purposes. They could be used either for undergraduate or post-graduate instruction, according to the facilities available. With such arrangements for practical training, the students will be

brought into touch with rural conditions, and they will become rural-minded. The existing slur that our graduates do not like to go to the villages will thus gradually disappear. Certain District hospitals and Rural Health Centres also should be upgraded and used for providing Internships and resident appointments. This is a matter, in which, there should be a close collaboration between the Universities and the Medical Departments of the State Governments.

4. *Teaching Standards*: It should be realised, that the standards laid down by the Medical Council of India are the minimum standards of Medical education. There is nothing to prevent the Medical Colleges and Universities to go beyond this. There should be freedom of teaching and learning in our Colleges, and the teachers should have full freedom to organise the instruction in their respective subjects.

5. *Co-ordination in Preclinical and Clinical subjects*: There should be greater co-ordination between the pre-clinical subjects (Anatomy and Physiology) and clinical studies. This reform in Medical education is urgently needed.

6. *Service Conditions for Teacher*: If we are to utilise the best talent of the country for medical education, the remuneration and conditions of service of teachers in Medical Colleges must be improved, and the age of retirement of Professors should be raised.

7. *Medical Research*: I need not stress the importance of Medical Research in our teaching institutions. Medical research and education are inseparable. Medicine should be taught in an atmosphere of research. It is only then, that

students acquire an aptitude for research. Intellectual curiosity, which is essential to undertaking research, is aroused when the student sees his own teachers actually engaged in carrying out various original investigations.

India has a good record of Medical research to its credit. The names of Carter, Ross, McCarrison, Leonard Rogers, Brahmachari and others are well known, who have made important contributions to Medicine.

Medical Research is carried out here largely under the auspices of the Indian Council of Medical Research. A certain amount of Research work is done in Medical Colleges, but it needs to be further organised and encouraged. Adequate facilities in the way of trained personnel, equipment and accommodation should be provided there.

8. *Medical Ethics*: The first great need of medical education is to bring teachers and students together in a happy and stimulating environment, which is conducive to the growth of a thorough understanding of the vital processes in health and disease.

The ethical standards laid down for Teachers and students in ancient India were very high.

Charaka, who ranks with Hippocrates, the famous Greek physician, as a great teacher of medicine in ancient India, laid down the following qualification of a good teacher:—

“One whose precepts are sound, whose practical skill is widely approved; who is clever, dexterous, upright, and blameless; one who knows also how to use his hands, has the requisite instruments and all his senses about him, is confident with simple cases, and sure of his treatment in those which are difficult; of genuine learning, unaffected,

not morose or passionate, and who is likewise patient and kind to his pupils." (Lakshmi Patti 1944).

According to *Sushruta Samhita* the teacher addressed the following words to the student at the time of the initiation:

"Thou shalt renounce lust, anger, greed, ignorance, vanity; egoistic feelings, envy, harshness, falsehood, idleness, nay all acts that spoil the good name of a man..."

We should establish a true relationship of a *guru* and *shishya*, between the teachers and students in our Medical Colleges. There should be more personal contact between the teachers and the taught. If the students in the College are *in statu pupillari*, the teachers are in the position of their parents — *in statu parenti*. There is need for the establishment of a happier atmosphere in our teaching institutions. The students must learn to love their Alma Mater and have respect for their teachers, while the teachers should show true affection and regard for the students and aim at promoting their knowledge and welfare. This will improve the discipline in the Institutions and promote mutual understanding between the teachers and the students.

One of the objects of our Association, as I said before, is to "make rules prescribing standards of professional conduct of members of the Association." The rules of Medical Ethics are well-known and are capable of universal application, and we physicians should set an example and should guide the whole profession in this respect. Following the ancient traditions of our noble calling, whose roots go back to ancient India, Greece and Rome, let us make a firm resolve that we in India shall always

follow the highest ethical principles in the practice of our professional work. A special stress on these ethical principles should be laid in the training of the undergraduates; and the Hippocratic oath with which we are all familiar should be solemnly read out to them at the commencement of their studies.

Today Medical Education is drawing world-wide attention. The first World Conference on Medical Education was held in London last August under the Presidentship of Sir Lionel Whitby. The recommendations of the Conference, I hope, will be of great help in the progress of Medical Education.

The concept of Medical education is changing in this changing world order. It presents problems, which are of a universal nature, but in their solution, local conditions have to be taken into consideration. There is, however, a general desire to raise the educational standards. In India, there is a general consciousness of the fact, that the danger of deterioration of standards should be avoided at all costs. In achieving this object, a close co-operation between the medical profession, the Medical Colleges, the Universities, and the Governments concerned is necessary, and we Physicians should see that adequate Standards are maintained in our teaching institutions.

Rajkumari Amrit Kaur, the Union Health Minister, while inaugurating the Conference of the Association of Surgeons of India, at Agra, the other day, told us that it is proposed to establish in Delhi an All-India Institute of Medical Sciences which, while it will have undergraduate training as part of its functions, will concentrate mainly on post-graduate training in all the major branches of medicine and will, as an important part of its functions,

train teachers for the different medical colleges in India. Further, she also mentioned that under an upgrading programme, the Government of India have inaugurated, in association with State Governments, a scheme for improving the available facilities in particular subjects in a number of existing Medical Colleges, the intention being that the upgraded departments should function as centres of post-graduate training in the respective specialities to serve the needs not only of the State concerned but also of the country as a whole. Both these proposals are excellent, and we, physicians, welcome these increased facilities for training. May I add, that special steps should be taken for the training of future teachers, specially for non-clinical subjects, *e.g.*, Anatomy, Physiology, Biochemistry, etc., as we are very short of them.

Pharmaceutical Enquiry Committee: As Physicians, I am sure, you would be interested in the work of the Pharmaceutical Enquiry Committee, of which I have the honour to be the Chairman. This Committee has been appointed under the Ministry of Commerce and Industry, Government of India. According to its terms of reference, we are to study the working of the existing pharmaceutical manufacturing concerns in India with special reference to the demand for drugs produced and their essentiality, the quality of drugs, the cost of production, the efficiency of the process employed and whether the product is made from imported intermediates and penultimate products or from basic raw materials and chemicals. We are also to study the operations of foreign and or Indian concerns, who import drugs and pack them in the country as well as the extent of tie-up between the wholly or partly owned Indian concerns with foreign companies. It

is our duty to recommend steps for encouraging the manufacture of important drugs which are imported into the country and to enquire into the scheme of distribution of Pharmaceutical products, whether imported or manufactured or packed in the country, the profit margins to trade or industry and the part played in this by purely Indian as well as other concerns.

You will observe that the terms are very wide, and the work of the Committee is of a very comprehensive nature. We have to make a general survey of the entire Pharmaceutical Industry and to make recommendations for placing it on a sound basis.

The Committee has been working hard for some months. We have toured most parts of India, and have visited all the important manufacturing concerns. Apart from the industrial establishments we have visited all the important Research Institutions, Testing Laboratories, Medical Colleges, Government Medical Stores etc. We have consulted the representatives of the Medical profession, the Chemists and Druggists as well as the representatives of the Trade and Industry. We have also had the benefit of the advice of the Ministers in charge of Finance, Industry and Health in the various States as well as the Directors of Medical Services, Directors of Industries, Drug Controllers and other responsible officers in the States. We have received full assistance and co-operation from all. On behalf of the Committee and myself I offer them our very best thanks and our sincere appreciation of the help and advice they have given.

We have visited the Medical Colleges in the States especially to ascertain:—

(a) What Pharmacological Research has been done.

(b) What facilities exist for the testing and analysing of drugs.

(c) What facilities exist for the training of pharmacists.

It is a matter of pride, that one of the distinguished founders of the Pharmaceutical Industry in India, Acharya P. C. Ray, was from Calcutta. He had also won renown as a great research worker in Chemistry.

The Committee attaches great importance to research in drugs, as this is closely related to the progress of the drug industry. The training of an adequate number of pharmacists is also important, as they are required not only as auxiliary personnel in the Health Services, but also for the implementation of the Drugs Act and for employment in the Drug Industry.

I am, of course, not in a position to say anything definitely at this stage. The Committee hopes to submit its report to Government before very long. We trust, that the recommendations will be of such a nature as will be for the good of India in general and for the progress of the Pharmaceutical Industry and trade in particular.

As I have been talking of Medical education just now, I would like to say that Pharmaceutical Education needs to be regulated, controlled, and further encouraged, as it is of great importance to the health of the nation. There is need for a closer co-operation between the Pharmaceutical and the Medical professions in the country in dealing with various problems which affect us both, for example the danger of spurious and substandard drugs. We have been carefully looking into the administration of the Drugs Act in the States and the quality control of drugs with a view to making suggestions regarding improve-

ments which are necessary. I hope, with a better quality control of drugs, we physicians may employ them with greater confidence.

Concluding Remarks: When after 50 years or so, some historian writes the history of these years of transition through which we are passing, after the attainment of Independence, let it not be said, that we allowed our standards of Medical education to go down. Believe me, the quality of Medical relief offered to the people is in direct ratio to the standard of Medical education imparted. The higher the standard of Medical education the higher the standard of Health Services. It is, therefore, necessary to give a warning, that we should resist the temptation to have a mass production of doctors by lowering the standards.

The teacher holds the key position in the whole scheme of Medical education. His task is to teach and propagate the best that is known and taught in the world. He influences the minds of the students both in the class-room and outside by example as well as by precept. All Medical Teachers are united by a common bond and by a humanitarian tradition, which extends over thousands of years. The greatest responsibility, therefore, rests on their shoulders. The Teachers should see, that adequate standards of Medical education are maintained in the various Colleges. In this task they should have full co-operation and assistance from the authorities concerned.

Our immediate aim in India today is to devote ourselves to those tasks, which enable the country to become healthier and economically more prosperous. We physicians can play a valuable part in this service to our motherland. It is gratifying that the Central and the State Government are alive to the necessity of improving the

health services. There is enough work for every Medical man in the country, young or old. The country of course needs many more doctors than we are producing at present. With the expansion of Health Services, every young physician today has a wonderful opportunity of making his contribution to the building up of the nation by improving the health conditions, especially in the rural areas, where the need is greatest.

In the making of a physician, there is need for a sound liberal education, both in Science and the Humanities. We physicians recognise more than any one else, the dignity of human life and of human personality. In our outlook we are cosmopolitan, for Medicine is universal and knows no limitations of caste, creed, nationality or distance. Apart from the cure and prevention of disease and promotion of health, physicians are also instrumental in promoting international goodwill and peace.

"If ever the human race is raised to its highest practical level intellectually, morally and physically, the Science of Medicine will perform that service" — Descartes.

In performing that noble service to humanity, I wish our Association of Physicians of India the very best of success.

V

MEDICAL EDUCATION*

On casting a glance at the year that has just ended, the first thought that occurs to one is the pronounced economic depression that has prevailed in the medical profession, in common with the rest of the community. But perhaps the distress is more acute in our profession than in any other, for the reason that medicine is a vocation of the learned, and learning has fewer rewards, except when acquired for its own sake. The training of the undergraduate is long and expensive, and the future prospects of the qualified doctor less promising than ever. I may tell you briefly what has been happening in the sister Presidency of Madras. The Government of Madras appointed a committee in 1928 to examine certain questions connected with the future of medical education in that Presidency. The report of the committee was published in April 1930. Some points in the report² are worthy of our consideration.

The committee prepared a questionnaire, which was issued to various medical men and women in the Presidency, representing teaching and non-teaching services, and also to a large number of non-service members of the profession possessing various and diverse qualifications. A modified questionnaire omitting matters of a technical nature was issued to lay bodies, *viz.*, to all district boards,

*Being the presidential address on the occasion of the Annual General Meeting of the Grant College Medical Society on 8th March, 1931. Reprinted from The Indian Medical Gazette Vol. LXVI (No. 9 Sept. 1931).

² Government of Madras, Local Self-Government Department, Public Health G.O. No. 851 P.H., 7th April, 1930.

municipalities and taluk boards. The questionnaire dealt with:—

(1) The number of medical men and women who could be expected to earn a reasonable livelihood:—

- (a) in government or other paid services,
- (b) with the help of rural dispensary subsidies, or
- (c) in unaided private practice.

(2) The location of medical educational institutions and the system of staffing them, and

(3) The minimum standards of education.

The report states, that the general consensus of opinion, both in the answers given by medical practitioners as well as by the lay bodies showed, that there was evidence of an increasing difficulty in earning a reasonable livelihood, especially among the junior members of the profession, and that even in some rich districts like West Godavari, where opportunities for private practice may be expected to exist, as many as 50 medical men were leading a hand-to-mouth existence. The fact that 378 applicants appeared for vacancies before the committee which sat recently to select sub-assistant surgeons is ample evidence of the difficulties which are being experienced by medical men in getting suitable employment. This is not confined to juniors, but is also felt by men who have settled down in practice for seven or eight years. It has also been gathered that while at the present moment there is not much actual unemployment, there are good reasons to believe that the economic prospects in the medical profession are rapidly deteriorating, and that the existence of this economic pressure, not only lowers the ethical standards and the status of the members of the profession, but also has an adverse in-

fluence on the quality of applicants for admission to the medical colleges and schools. The ultimate result will undoubtedly be a deterioration in the quality of the medical aid which will be available to the public. It had been hoped that considerable numbers of medical men would find employment in the villages, but this hope has not yet been justified.

The chief reasons for the unpopularity of rural practice are:

- (1) Lack of opportunities for private practice.
- (2) Absence of social amenities.
- (3) Lack of facilities for the education of families.
- (4) Anxiety as to fixity of tenure owing to the appointment being dependent on the pleasure of the local bodies.

The committee state that this last factor has been mentioned in a large number of replies from the members of the medical profession and the committee feels that the subsidized practice would be more attractive if the rural medical practitioners' tenure of appointment depended on the report of the district medical officer instead of on the pleasure of the local body and strongly recommends that the subsidy be paid direct by government on the production of a certificate from the district medical officer to the effect that the rural medical practitioner has been doing satisfactory work.

On a census being taken of the number of medical practitioners, including women, who could be expected to earn a living wage by unaided private practice, it was estimated that about 100 might be absorbed by this method

in each year. If to this figure is added 50 medical practitioners who may be required yearly for subsidized dispensaries and about 35 for government services, a total number of 185 medical practitioners may be expected to be absorbed yearly. Adding a margin of 15 for other forms of employment, the maximum number of medical men and women who have reasonable prospects of employment is about 200 a year. The committee is of opinion that, instead of turning out an unlimited number of qualified doctors, the policy of the government should be to educate only the number of medical men and women, who can reasonably be expected to earn modest incomes. It is only under such circumstances that the tone of the profession can be maintained. Estimates have been made of the numbers of medical men in relation to the total population of Madras, and these figures have been compared with those, which obtain in other countries. Such a comparison is fallacious as in the western countries, where the ratio of medical men to the population is higher than in Madras, there are no unlicensed hakims, vaidyas, barber surgeons, etc., who contribute to the medical needs of the people. If these practitioners are taken into account the ratio of medical men to the population of Madras will compare favourably with that which prevails in other countries. The need of Madras is not so much for more doctors as for better doctors. The committee further notes, that the numbers of applicants for admission to the medical schools have fallen off during the past few years, the chief cause being the diminution in the prospects of earning a living, while another factor is the growing dissatisfaction with the diploma (L.M.P.) which is granted at present. There is also evidence that while there is not much indication



of a falling off in the quality of the students in the colleges, the educational qualifications of candidates for admission to the medical schools have deteriorated very greatly during the past two or three years.

I have quoted the views of the committee *in extenso*, for it would appear that the conditions as regards the present position of the medical profession are to a great extent identical in the Madras and Bombay Presidencies, and the remedies proposed in one case would presumably be applicable to the other. Obviously one method of dealing with the problem of unemployment in the profession is to control the production of fresh recruits. But it is to be observed, that the economic forces are working already, in such a way, that the number of admissions to our medical college in Bombay has automatically gone down during the last few years. Another remedy is a more uniform distribution of medical men in all parts of the Presidency, especially in the rural areas. At present there is too great a tendency for men to settle down in large towns; but before they can be induced to go to the villages, the conditions of rural practice should be made more attractive. It seems to me, that an enquiry such as that mentioned above if undertaken in Bombay Presidency will yield interesting and fruitful results.

An integral part of this problem is the question of post-graduate medical education. The process of education ought not to end with the acquisition of a degree or diploma at the university or the medical school. It must be continued throughout life. Such continued training is of the utmost value to the practitioner himself and also to his patient. It is now well recognised, that the medical practitioner should be given necessary facilities to refresh

and add to his store of knowledge from time to time. During my recent visit to Europe I was especially interested to learn what arrangements had been made at different training centres for post-graduate medical education. In England, there are signs of active efforts in this direction. In January 1921, Dr. C. Addison, the Minister of Health, appointed a committee under the chairmanship of the Earl of Athlone to investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit a practical scheme for meeting them. The report of the committee was published in May 1921. The committee, after summarising briefly the chief measures adopted in London and elsewhere to provide facilities for post-graduate medical instruction, attempted to define the nature and extent of the demand for such instruction and mentioned the following categories of persons requiring consideration:—

- (a) Graduates who have recently qualified.
- (b) General practitioners of some years' standing who require general courses in medicine and surgery.
- (c) Graduates from home and abroad, who need instruction immediately after qualification with a view to a higher degree or diploma.
- (d) General practitioners who seek instruction in special subjects.
- (e) Officers in the services, Navy, Army, Indian and Colonial.
- (f) Graduates who require facilities for extended medical research.

(g) Graduates from abroad falling in categories (b), (d) and (f) above.

The Committee recommended that:—

(1) A school attached to a hospital centrally situated in London should be devoted solely to post-graduate medical education.

(2) The school should be a school of the University of London, and receive substantial financial assistance from the Treasury through the University Grants Committee.

(3) In addition to the course provided at the central school for the full time instruction of the general practitioners and at existing post-graduate college and schools, further facilities for post-graduate study should be made available at non-teaching hospitals and in Poor Law infirmaries.

(4) It is desirable, that increased use should be made of cottage hospitals in which all general practitioners of the neighbourhood should have the right, if they so desire, to treat their patients.

(5) A much larger number of resident appointments and clinical assistantships should be created in hospitals and Poor Law infirmaries.

(6) A central office should be established to co-ordinate and develop the work of post-graduate education in London. In the administrative building, should be provided not only offices but the accommodation necessary for social purposes.

(7) An Institute of State Medicine should be established by the University of London in which instruction should

be given in public health, forensic medicine, medical ethics, and economics.

Again another committee was appointed in 1925 by Mr. Neville Chamberlain, the Minister of Health, to draw up a practicable scheme of post-graduate medical education centred in London. The report of the committee was published in April 1930. The Committee notes the pioneering steps in this direction taken by Sir Jonathan Hutchinson, Sir William Broadbent, and Dr. Theodore William and the Medical Graduates College and Polyclinic, and the museum founded by Hutchinson. The Fellowship of Medicine founded in 1919 under the initiative and influence of the late Sir William Osler, with its headquarters at 1, Wimpole Street, has been doing excellent work. Latterly the Fellowship of Medicine was amalgamated with the Post-graduate Medical Association, and several of the great hospitals and medical schools, and almost all of the non-undergraduate general and special hospitals were affiliated with the Fellowship of Medicine. With their co-operation a continuous programme of post-graduate courses, lectures and demonstrations was arranged throughout the year.

In addition, as is well known, some of the large hospitals make post-graduate provision for their own old students and others. The committee makes important recommendations. It states that the most serious defect in the existing provision for the further education of medical practitioners in London is that there is no hospital and medical school in London exclusively devoted to providing post-graduate medical education. They propose the establishment of a British Post-graduate Hospital and Medical School in London, and make an important observation

that it is an essential condition of effective post-graduate teaching in medicine, that post-graduate and undergraduate students should not be taught in the same medical school. They, therefore, suggest that the Hammersmith Hospital, one of the public hospitals in London, which under the Local Government Act of 1929 would become a County Council hospital in April 1930, should serve as the possible basis for the establishment of the British Post-graduate Hospital and Medical School. The scheme has been worked out in all its aspects, financial and otherwise, and we may look forward in the near future to its taking a practical shape. This will afford excellent facilities to our graduates, who go to England for post-graduate medical studies. In describing the history of this movement in England, I am also hoping that similar enquiries will be set up in our own country to explore the ways and means of providing the same facilities for post-graduate training in India.

I have studied the conditions in Paris and Vienna also. In Vienna, as you know, there is an extensive organisation for the post-graduate training of medical men. The University of Vienna organises a number of such courses to meet the special needs of general practitioners, specialists and research workers. The American Medical Association at Vienna supplies a special need in this respect. Intensive training in different branches of medicine and surgery is provided by the university teachers, mostly in English, and these facilities are much appreciated and taken advantage of.

As regards undergraduate medical education, I may state that there is a general movement to simplify the curriculum, and if possible to reduce its length. In this